

REMARKS/ARGUMENTS

Claims 3 - 5, 7-11, 16 – 35 and 37-40 are pending. Claims 7 - 11, 18, 21 and 22 have been allowed, and Applicants gratefully acknowledge the Examiner's allowance of these claims. Claims 26, 29, 31, 33, 35, 37 and 39 are amended. Reexamination and reconsideration of the pending claims are respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

Claims 25 - 27, 29, and 31 - 35, 37 - 40 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. The rejections are traversed in part and overcome in part as explained below.

With respect to claim 31 (and the claims that depend therefrom), this claim has been amended to recite a substantially uniform ion energy distribution and a substantially uniform ion weight distribution so that this rejection is overcome.

With respect to the scope of the enabling disclosure of claim 31, Applicants have amended claim 31 to recite at "recording media substrate" so that this rejection is overcome.

The Examiner has rejected claims 26 and 37 as allegedly encompassing new matter and directed to a single dominant species. The Examiner has alleged that the specification supports groups of dominant species (e.g. C₂ as a group) and not a single dominant species. Applicants have amended claims 26 and 27 to recite "dominant C₂ species" of carbon ion and "non-dominant species of C₄" carbon ion so that this rejection is overcome.

Claims 29 and 39 were rejected as allegedly encompassing new matter. Applicants have amended claims 29 and 39 to recite a Raman G peak within a range from about 1490 to about 1510 cm⁻¹, in agreement with Table II, so that this rejection is overcome.

Claims 30 and 40 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. Office Action Supplement, page 5. Applicants respectfully submit that the "plasmon peak" is explained in the

context of the specification. In particular, Applicants refer the Examiner to paragraphs 102 and 103 on pages 27 and 28 of the Application, which explains that

[102] the relatively high Plasmon-peak measured from the electron-energy-loss-spectroscopy (EELS). Plasmon peak is the energy of a type of excitation called a plasmon. It is a quantum of charged particle cloud vibration. The energy value is directly related to the charged particle (e.g., electron) density.

[0103] The Plasmon-peak Ep is representative of the density of the films. Thus, taking the Ep of diamond to be 34 eV, it is estimated that the most-diamond-like ta-C:H films have above 80 % C-C sp₃ bonding (this is independent of whether there is long range order or not).

This description of the plasmon peak energy as related to the density of the films, and comparison of the obtained values to **diamond**, makes it clear that the plasmon peak energy pertains to the diamond like qualities of the films.

REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 25, 27, 28, 31-35, & 38-40 rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 28 and 32 were rejected as allegedly indefinite for use of the term "subplantation". Applicants respectfully submit that the term "subplantation" was well known in the art at the time of filing and used in the context of this well known meaning in the specification, for example in paragraph 15 on page 5 and in paragraph 40 on page 10. Applicants respectfully refer the Examiner to a publication by Lipshitz et al., entitled "Subplantation Model for Film Growth from Hyperthermal Species: Application to Diamond," *Physical Review Letters*, March 13, 1989, made of record in an IDS submitted on June 1, 2006. Applicants respectfully request that the Examiner provide initials of record showing that reference was considered.

With respect to claims 31 (and claims 32-35 depending therefrom), this claim has been amended to recite a substantially uniform ion energy distribution and a substantially uniform ion weight distribution so that this rejection has been overcome.

Claims 25, 27, 35, and 38 were rejected as vague and indefinite based on the Examiner's allegation that it is unclear as to how a "bias voltage" related to the

claimed process. Applicants respectfully traverse. Applicants respectfully refer the Examiner to paragraph 54 on page 14, which states

Where the extraction electrode is grounded, this plasma voltage biases the plasma relative to the grid, accelerating the ions through the extraction grid and toward the substrate. As can be determined from the above equation, the plasma beam source allows the biasing voltage to be selectively controlled, providing a highly advantageous mechanism for controlling ion impact energy.

As the Examiner certainly knows and appreciates, the impact energy of the ions is important. As the plasma voltage biases the plasma relative to the grid, accelerating the ions, the "bias voltage" is clearly related to the claimed process.

OBVIOUSNESS-TYPE DOUBLE PATENTING REJECTIONS BASED ON USPN 5,858,477

Applicants gratefully acknowledge the approval by the examiner of the terminal disclaimers filed on June 1, 2006, and that the obviousness-type double patenting rejections were removed.

REJECTIONS UNDER 35 U.S.C. § 103(a) ~ BALDWIN

Claims 3-5, 16-17, 20, 23-4, 29-30 and 37-38 were previously rejected under 35 U.S.C. §§ 103(a) as allegedly obvious over USPN 5,616,179 (hereinafter "Baldwin"). Applicants respectfully traverse.

Applicants note that the Examiner has relied on inherency. Office Action Supplement, page 7.

As the Examiner certainly knows and appreciates, to establish inherency the extrinsic evidence must make clear that the missing descriptive matter is **necessarily present** in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. MPEP 2112, *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51.

The Examiner has failed to show that the claimed substantially uniform impact energy distribution and substantially uniform weight distribution are necessary

present, per MPEP 2112. Thus, 3-5, 16-17, 20, 23-4, 29-30 and 37-38 are allowable over Baldwin.

REJECTION UNDER 35 U.S.C. § 103(a) LEWIN IN COMBINATION WITH BALDWIN OR RABALAIS

Claims 19, 31-35 & 39-40 were rejected as allegedly obvious under § 103 over Baldwin in combination with Rabalaïs. Applicant's respectfully traverse.

Applicants note that claim 19 depends on allowable claim 3 and is allowable as depending on an allowable claim and reciting additional novel combinations of claim elements.

Amended claim 31 is allowable for reasons similar to claim 3. Claims 32-35 and 39-40 depend on claim 31 and are allowable as depending on an allowable claim and reciting additional novel combinations of claim elements.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested. A petition and fee for a 1 month extension of time is also enclosed.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 510 - 540 - 6300

Respectfully submitted,



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June 18, 2007
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